

the benefits of improved mail communication. But even if Victoria assumes the whole cost and the whole responsibility, it is an undertaking, like her railways, which will amply repay the country the outlay, in increasing security, and assured prosperity and peace at home.

Sale, 10th October, 1862.

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ART. XXI.—*On Fossil Polyzoa.* By HENRY WATTS, ESQ.,  
of Warrnambool.

[Read 29th June, 1863.]

Having for some years devoted a considerable portion of my leisure time to the study of the microscope and its attendant sciences, it is perhaps but a duty to place before you some account of my endeavours in forming a collection of plants and animals of microscopic growth. A catalogue of fresh-water Algæ and Desmidiaceæ was some time since laid before you, and, when leisure permits, one of Victorian Diatomaceæ will be compiled.

The portion of microscopic study to which I have lately devoted much time, has been the preparation of Polyzoa, collected in Lady Bay, between the mouths of the rivers Merri and Hopkins, over a distance of one and a-half miles, such locality having come under my particular attention as being nearest to the town of Warrnambool. I have, at the present time, over one hundred distinct species of Polyzoa, besides numerous specimens which, as it were, come between distinct species. Some thousands of specimens have passed through my hands, collected in all weathers, at all times, and various seasons, with, and on, Marine Algæ, shells, and pieces of stone, &c.; the most abundant source of supply is obtained from the large roots of kelp, cast ashore after storms, on fronds of *Peyssonnelia Australis* and shells of *Haliotis*.

Often have I gone down to the low-lying reefs on the west of the River Merri, and, watching for the retreating tide, suddenly made a dash after some weed, and as rapidly as possible returned for fear of some treacherous wave, hastily searched for these beautiful microcosms, placing them in bottles, and returned home to see them under the microscope. After a little while what a sight appears, all is life and activity, the protruding tentacles waving in all directions,

now darting after some imaginary prey, and as suddenly returning with its prize. The peculiar motion of the vibracula of some species is sure to elicit exclamations of surprise from the most stolid observer, the whole forming a picture of microscopic life such as will not easily be forgotten. It is not often that Polyzoa can be caught alive with seaweed that is cast ashore, but on one occasion I met with specimens alive of that beautiful species described to you as a new species, and named by Dr. Mc Gillivray as *Carbasea cyathiformis*, and one of which is now in our National Museum.

At the same time that I was collecting Polyzoa, a constant look out was kept for *Foraminifera*. The interest that has been excited by these beautiful shells, from the fact of their living at vast depths in the sea, as has been proved by the soundings taken for laying the Atlantic telegraph cable, was sufficient reason why I should endeavour to add, if possible, some specimens to my cabinet, if only as representative forms. Either from not knowing how to collect them, or, perhaps, Warrnambool not being a right locality for them, only a few specimens have come under my notice: But as *nil desperandum* is the order of the day, *Foraminifera* I must have dead or alive; new and modes of collecting must be adopted. I thought of dredging, but this occupying more time than I could well afford it was discontinued; but one day, walking along our beach, I observed lumps of clay, apparently such as would be drawn up by ships' anchors and washed ashore. The clay was instantly bagged, taken home to undergo the operations of boiling in soda, and repeated washings. I did at last find Foraminiferous shells, but only of two species. This lump of clay also contained numerous Diatoms, which, on a future occasion, will be noticed. A few *Foraminifera* are also to be found in the bed of shells laid open by the excavations made for diverting the course of the River Merri.

But my chief object in appearing before you this evening is to exhibit specimens of Fossil Polyzoa and *Foraminifera*. I cannot claim the credit of having found the deposit, for the material, from which these specimens were extracted, was selected from a box of fossil shells, &c., forwarded by Mr. John Allen, who was leader of a party sent from Warrnambool to endeavour to find a gold-field in the Cape Otway ranges. The deposit is described as being about thirty miles east of Warrnambool, extending along the sea coast for a distance of from six to seven miles, and is from thirty to forty

feet in thickness. Out of a portion of this deposit, weighing perhaps three or four pounds, I have prepared and mounted forty-six species of Polyzoa, eight species of Foraminifera, comprising Globigerina, Textularia, Dentalina, Operculina, Rosalina, Rotalia, Nodosaria, three species of Lagena, and siliceous spicules of Tethya and Grantia. After boiling the material, repeated washing and drying, it is then subjected to a bleaching process, consisting of the action of sulphuric acid on bicarbonate of soda in solution. After sifting, the finest portion in which the Foraminifera are found is then macerated in turpentine for a few days, the shells are then selected and placed in Canada balsam on slides heated on a metal plate over a spirit lamp, and the specimens before you will show that it is possible to mount them tolerably transparent and free from air bubbles.

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ART. XXII.—*Report on the Entrance to the Gipps Land Lakes.* By THOMAS E. RAWLINSON.

[Read June 2nd, 1863.]

Road Engineer's Office, Sale, 14th February, 1863.

To the Assistant-Commissioner of Roads and Bridges.

SIR,—1. I have the honor to report having placed myself in communication with Mr. District Surveyor Dawson, relative to making a survey of the entrance to the Gipps Land Lakes, as per your instructions of the 30th ultimo.

2. From the correspondence on the subject, which I have looked over, I learn that you decline to authorise any expenses, on the ground of "no funds," and, in answer to my inquiries, Mr. Dawson informs me that he does not feel authorised in incurring any expenses, beyond those absolutely required for his own especial service, under which circumstances, I have declined to absent myself from the numerous urgent duties of this district, until I have had further instructions from you on the subject.

3. I have adopted this course because the proposed visit, under such circumstances, would not place me in any better position to report on the facts than I am in at the present time, for, in July 1861, during the period of my official visit to McLennan's Straits and the Mitchell, I had, through the kindness of Messrs. McArdle and Raphael, an opportunity of making such inspection as the present proposed one